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SANYO Semiconductors

## DATA SHEET

# TND311S

ExPD (Excellent Power Device)  
 General Purpose Driver for PDP Sustain Pulse Drive, Motor Drive,  
 Switching Power Supply, and DC / DC Converter Applications

## Features

- Dual inverter.
- Monolithic structure (High voltage CMOS process adopted).
- Withstand voltage of 25V is assured.
- Wide range of operating voltage : 4.5V to 25V.
- Peak output current : 2A.
- Fast switching time (25ns typical at 1000pF load).
- Fully compatible input to TTL / CMOS. ( $V_{IH}$ =not more than 2.6V, at  $V_{DD}$ =4.5 to 25V)
- Built-in input pull-down resistance.

## Specifications

### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	$V_{DD}$		0 to 25	V
Input Voltage	$V_{IN}$		GND-0.3 to $V_{DD}+0.3$	V
Allowable Power Dissipation	PD max		0.3	W
Junction Temperature	$T_J$		-55 to +150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

### Recommended Operating Conditions at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Operating Supply Voltage	$V_{DD}$		4.5 to 25	V
Operating Temperature	$T_{opr}$		-40 to +125	$^\circ\text{C}$

### Electrical Characteristics (AC Characteristics) at $T_a=25^\circ\text{C}$ , $V_{DD}=18\text{V}$ , $V_{IN}=5\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-On Rise Time	$t_r$	$C_L=1000\text{pF}$		20	35	ns
Turn-Off Fall Time	$t_f$	$C_L=1000\text{pF}$		25	40	ns
Delay Time	$t_{D1}$	$C_L=1000\text{pF}$		25	40	ns
	$t_{D2}$	$C_L=1000\text{pF}$		45	60	ns

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**SANYO Semiconductor Co., Ltd.**

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# TND311S

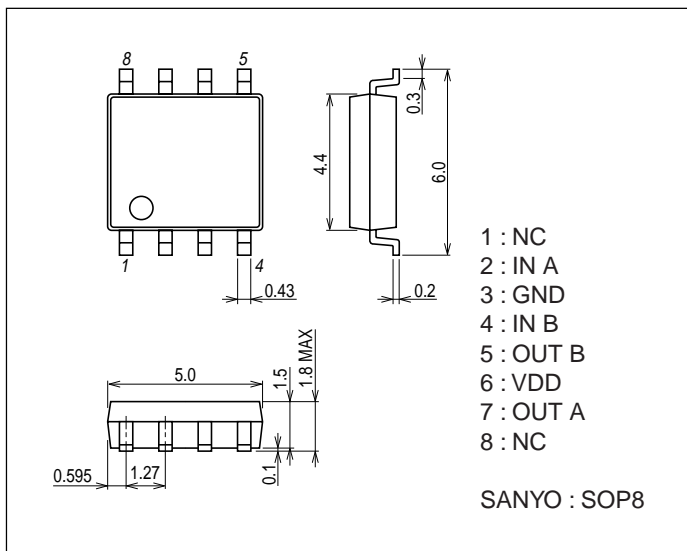
## Electrical Characteristics (DC Characteristics) at $T_a=25^\circ\text{C}$ , $V_{DD}=4.5$ to $25\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Logic "1" Input Voltage	$V_{IH}$		2.6			V	
Logic "0" Input Voltage	$V_{IL}$				0.8	V	
Logic "1" Input Bias Current	$I_{IN+}$	$V_{IN}=V_{DD}=25\text{V}$		20	55	$\mu\text{A}$	
Logic "0" Input Bias Current	$I_{IN-}$	$V_{IN}=0\text{V}$ or $V_{DD}$	-1		1	$\mu\text{A}$	
High Level Output Voltage	$V_{OH}$	$I_O=0\text{A}$	$V_{DD}-0.1$			V	
Low Level Output Voltage	$V_{OL}$	$I_O=0\text{A}$			0.1	V	
$V_{DD}$ Supply Current	$I_{supp}$	$V_{DD}=10\text{V}$ , $V_{IN}=3\text{V}$ , (both inputs)		1.0	4.5	$\text{mA}$	
		$V_{DD}=10\text{V}$ , $V_{IN}=0\text{V}$ , (both inputs)			0.2	$\text{mA}$	
Output High Short Circuit Pulsed Current	$I_{O+}$	$V_{DD}=18\text{V}$ , $PW \leq 10\mu\text{s}$ , $V_{OUT}=0\text{V}$		2.0		A	
Output Low Short Circuit Pulsed Current	$I_{O-}$	$V_{DD}=18\text{V}$ , $PW \leq 10\mu\text{s}$ , $V_{OUT}=18\text{V}$		2.0		A	
Output On Resistance	$R_{OUT}$	$V_{DD}=18\text{V}$ , $I_{load}=10\text{mA}$ , $V_{OUT}=\text{"H"}$			4	6	$\Omega$
		$V_{DD}=18\text{V}$ , $I_{load}=10\text{mA}$ , $V_{OUT}=\text{"L"}$			3	5	$\Omega$

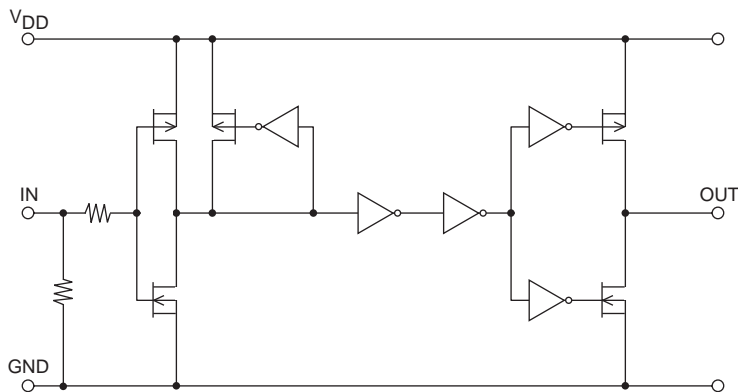
## Package Dimensions

unit : mm (typ)

7005-007

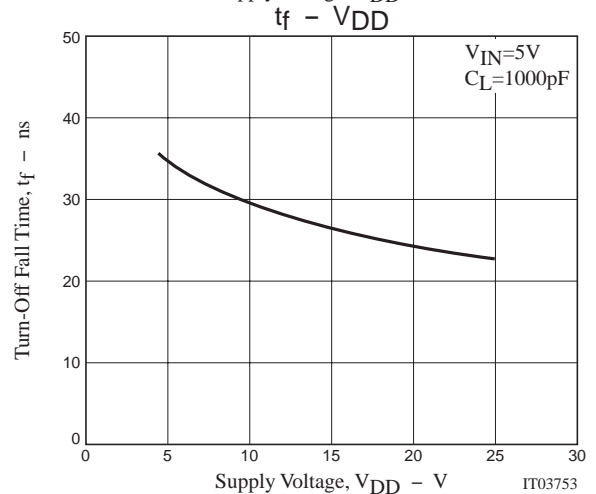
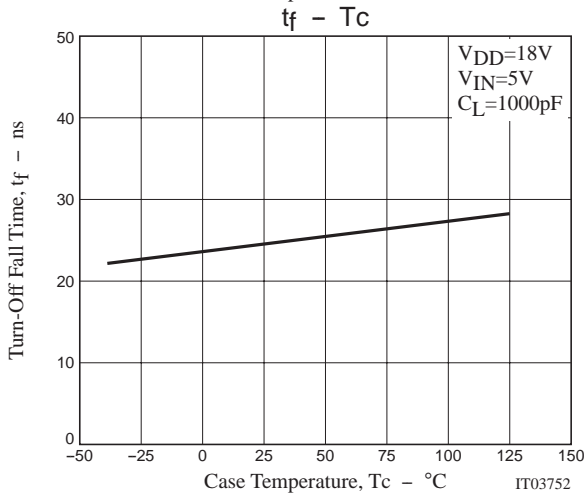
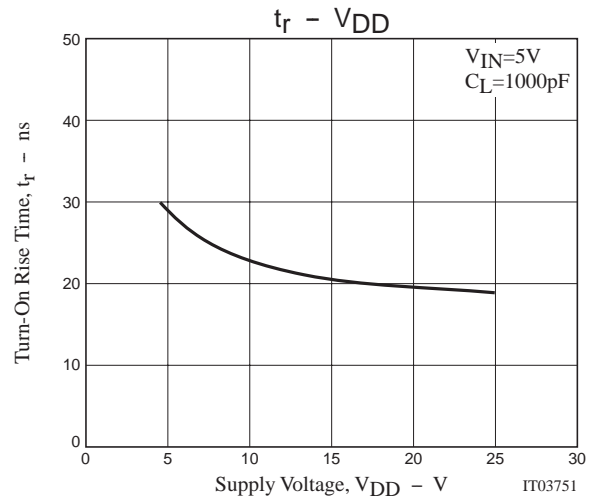
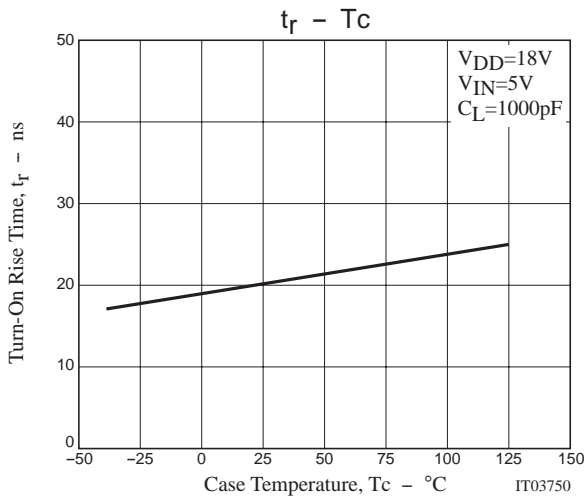
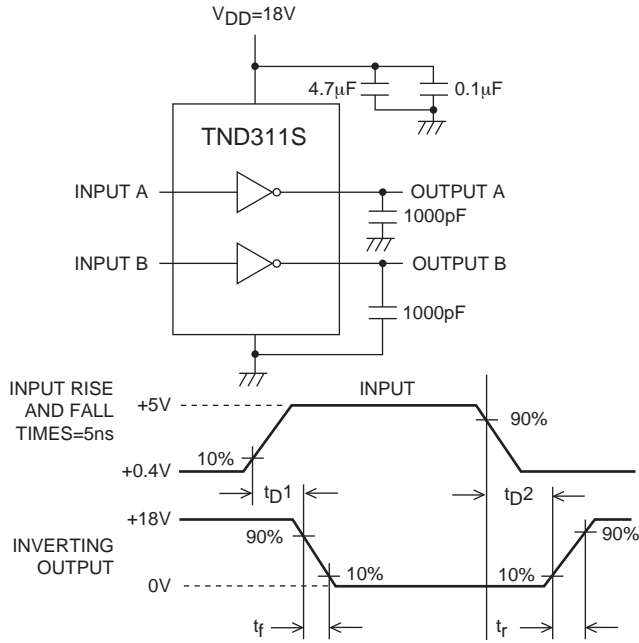


## Block Diagram

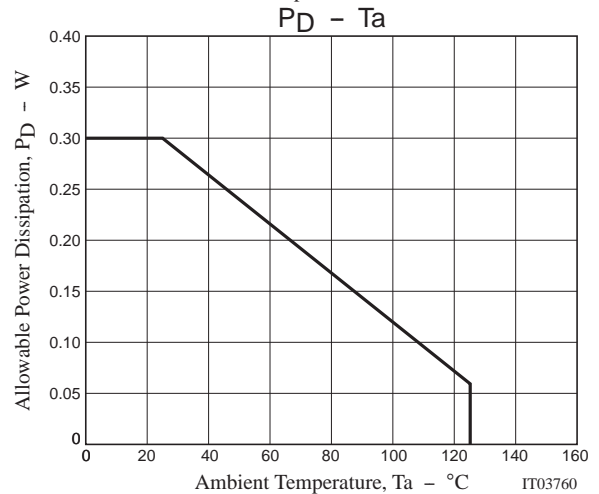
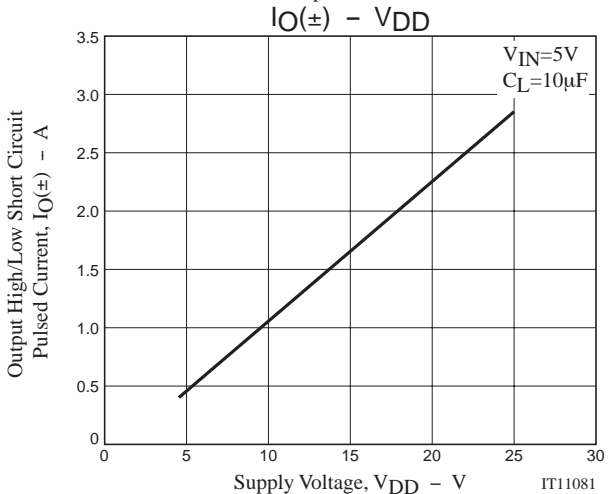
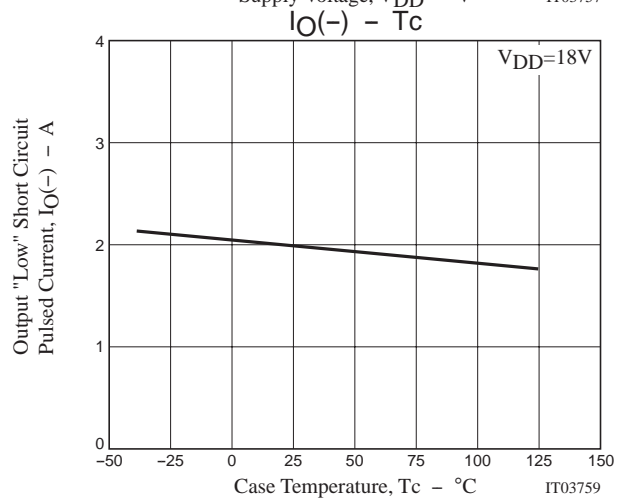
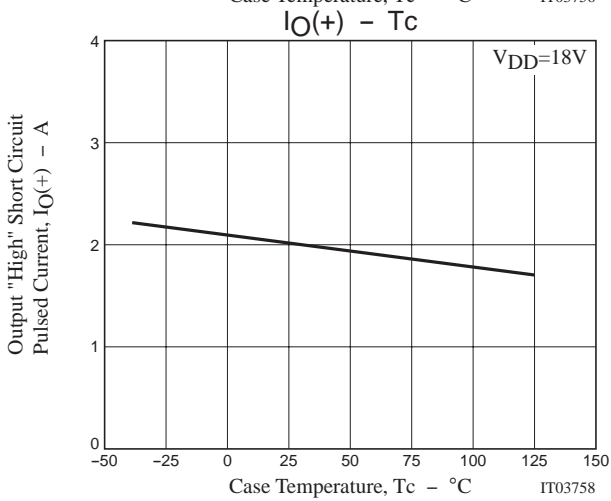
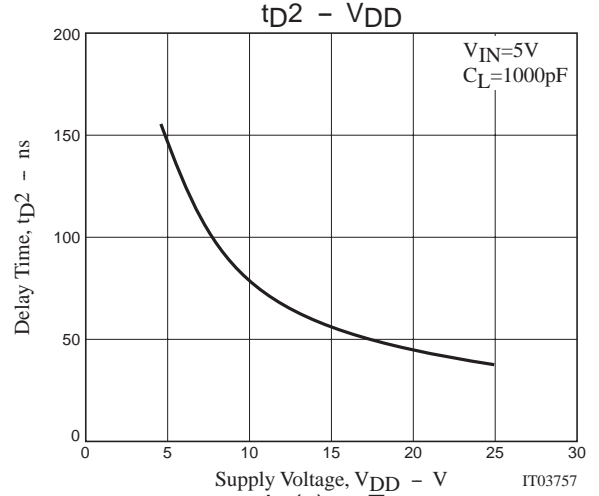
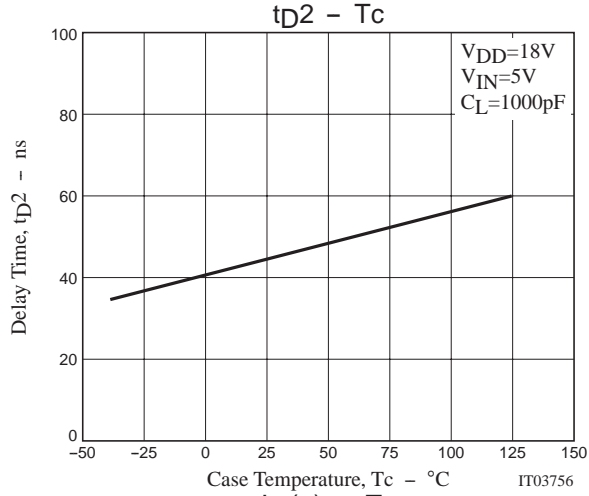
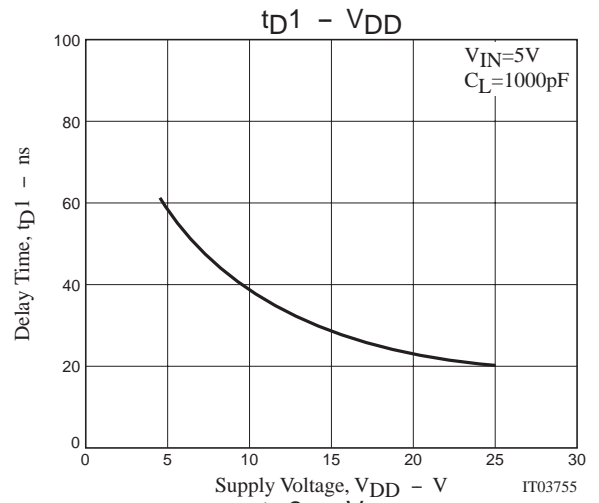
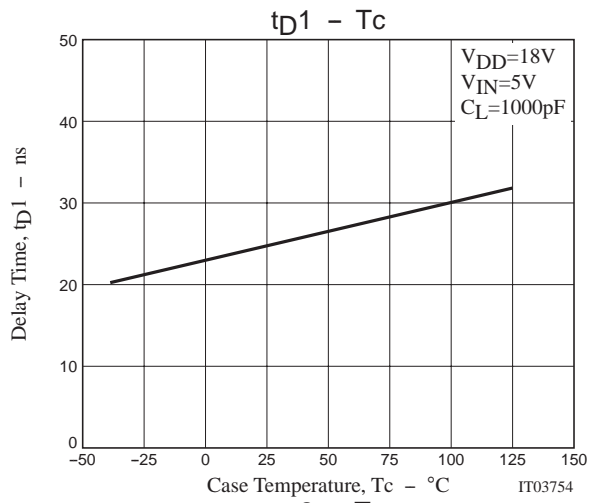


# TND311S

## Switching Time Measuring Circuit



# TND311S



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